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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,953	03/15/2004	Greg Galazin	HOL01 P453	9955

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PRICE HENEVELD COOPER DEWITT & LITTON, LLP
695 KENMOOR, S.E.
P O BOX 2567
GRAND RAPIDS, MI 49501

EXAMINER	
MCCREARY, LEONARD	

ART UNIT	PAPER NUMBER
3616	

DATE MAILED: 05/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/800,953	GALAZIN ET AL.	
	Examiner	Art Unit	
	Leonard J. McCreary, Jr.	3616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-27 and 29-31* is/are rejected.

7)☒ Claim(s) *6 and 28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/22/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of claims 8 and 9 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 7, and 12 stand rejected under 35 U.S.C. 102(b) as being anticipated by US 2002/0130480 to VanDenberg. VanDenberg discloses a variable compliance pivot assembly and suspension system comprising the following:

a. A suspension system for suspending a vehicle frame above a plurality of ground-engaging wheels, comprising: a wheel-carrying axle 4 comprising a first end and a second end; a pair of frame bracket assemblies 14 each comprising a resiliently-bushed pivotable connection 34 defining a pivot axis, the frame bracket assemblies operably coupled to opposite sides of the vehicle frame, the resiliently-bushed pivotable connection comprising a substantially cylindrically shaped bushing 40; and a pair of trailing arms 20 each comprising a first end 58 operably coupled to the first end and the second end of the axle, respectively, and a second end 32 comprising an aperture 38 that receives the bushing of one of the frame bracket assemblies therein, wherein the aperture of the second end of each trailing arm is nonsymmetrical (para 0036, lines 8-9), thereby causing a

nonsymmetrical compression of the bushing about the pivot axis (para 0039, lines 1-7) (claim 1.)

b. The aperture of the second end of each trailing arm is parabolically shaped (Fig. 4) (claim 2.)

c. The aperture is oriented so as to apply a greater compression in a substantially horizontal direction than in a substantially vertical direction (para 0039, lines 1-16) (claim 3.)

d. A suspension system for suspending a vehicle frame above a plurality of ground-engaging wheels, comprising: a wheel-carrying axle 4 comprising a first end and a second end; a pair of frame bracket assemblies 14 each comprising a resiliently-bushed pivotable connection 34, the frame bracket assemblies operably coupled to opposite sides of the vehicle frame, the resiliently-bushed pivotable connection comprising an elastically deformable bushing 40; and a pair of trailing arms 20 each comprising a first end 58 operably coupled to the first end and the second end of the axle, respectively, and a second end 32 comprising an aperture 38 that receives the bushing 40 of one of the frame bracket assemblies therein, the aperture defining an inner surface 50, wherein the inner surface is nonuniform (para 0036, lines 8-9), thereby reducing rotation of the bushing with respect to the trailing arm.

e. A suspension system for suspending a vehicle frame above a plurality of ground-engaging wheels, comprising: a wheel-carrying axle 4 comprising a first end and a second end; a pair of frame bracket assemblies 14 each comprising a

frame bracket and a resiliently-bushed pivotable connection 34, the frame bracket assemblies operably coupled to opposite sides of the vehicle frame; and a pair of trailing arms 20 each comprising a first end operably coupled to the first end 28 and the second end 32 of the axle, respectively, and a second end comprising an aperture 38 that receives the resiliently-bushed pivotable connection 40 of one of the frame bracket assemblies therein, wherein the second end of each trailing arm comprises a first thickness 32 across a width thereof and a second thickness 34 located proximate the frame bracket that is greater than the first thickness (Fig. 2) (claim 7.)

f. The second end of each trailing arm further comprising a lip extending radially outward from the aperture and at least one engagement surface 47, 49 extending radially outward from the lip and adapted to abut a bushing-removal tool (claim 12.)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 5, 13, 22-27 and 29 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0130480 to VanDenberg. The disclosure of VanDenberg is discussed above. VanDenberg further discloses an aperture in the second end of each

trailing arm has a nonuniform inner surface (claim 26.) Although VanDenberg meets all of the structural limitations of the claims, VanDenberg does not specifically teach casting the trailing arms. Re claims 5 and 27, it would have been obvious to one of ordinary skill in the art at the time of invention to leave the inner surface rough or to increase roughness so as to increase the rotation resistance since it is old and well-known that bushings are often press fit or vulcanized for this purpose. Re claims 13 and 22, it would have been obvious to one of ordinary skill in the art at the time of invention to manufacture the trailing arms according to old and well-known metal forming processes such as casting, welding, forging, hydroforming, magnaforming, etc. Further, the examiner notes that the method of forming is not germane to the issue of patentability of the device itself.

5. Claims 8 and 9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0130480 to VanDenberg in view of US 4,415,179 to Marinelli. The disclosure of VanDenberg is discussed above, and he further teaches the trailing arms may take on a variety of configurations (para 0037.) VanDenberg does not teach a cylindrically shaped trailing arm. Marinelli discloses an axle and airbag suspension system, and teaches the following:

g. The second end of each trailing arm 26 is substantially cylindrical tube shaped (column 2, lines 25-26) (Fig. 1) (claim 8.)

Re claim 8, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the suspension system of VanDenberg to include cylindrically

shaped trailing arms as taught by Marinelli so as to reduce manufacturing costs (column 1, lines 40-47.) Re claim 9, it would have also been obvious to one of ordinary skill in the art to use an elliptical tube wherein a radius of the second end corresponding to the second thickness is greater than a radius of the second end corresponding to the first thickness, so as to increase the arms' stiffness in a preferred direction.

6. Claims 10-11, 21, and 30-31 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0130480 to VanDenberg in view of US 6,241,266 to Smith et al. The disclosure of VanDenberg is discussed above. VanDenberg does not teach a trailing arm with a cavity or a slot. Smith discloses a trailing arm suspension with a wrapper compression axle mounting having a substantially circular mating surface 365 of the first end of each of the trailing arms 18 comprising a cavity or a slot, thereby reducing a localized stress transferred from the trailing arms to the axle. Re claims 10, 21, and 30, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the suspension system of VanDenberg to include a mating surface in the form of a cavity or a slot at the first end of the trailing arms as taught by Smith so as to mount an axle to a trailing arm suspension without weakening the axle (column 1, lines 18-23.) Re claim 11, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the suspension system of VanDenberg to include a cavity of substantially circular shape at the end of the trailing arms as taught by Smith so as to accommodate round axles.

7. Claims 14 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US 2002/0130480 to VanDenberg in view of US 5,836,698 to Richardson. The disclosure of VanDenberg is discussed above. VanDenberg does not teach a tool engagement surface with apertures. Richardson discloses an apparatus for removal and installation of strut bearings and teaches the following:

h. At least one engagement surface includes a first pair of engagement surfaces, and a second pair of engagement surfaces, wherein the first pairs and second pairs of engagement surfaces extend radially outward (Fig. 2.) (claim 14.)

i. Each of the engagement surfaces includes an aperture extending therethrough (Fig. 2) (claim 15.)

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the axle suspension system of VanDenberg to include the bushing removal tool engagement surfaces as taught by Richardson so as to increase serviceability of the bushings (column 1, lines 19-23.)

8. Claims 16-18 and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over 5,366,237 to Dilling et al. Dilling discloses a trailing arm axle suspension comprising the following:

j. A suspension system for suspending a vehicle frame above a plurality of ground-engaging wheels, comprising: a wheel-carrying axle 7 comprising a first end and a second end; a pair of frame bracket assemblies 41, 55 operably coupled to opposite sides of the vehicle frame; and a pair of shock absorbers 57

each comprising a first end operably coupled to the vehicle frame (Fig. 8) and a second end; and a pair of trailing arms 42, 69 each comprising a first end operably coupled to the first end and the second end of the axle, respectively, a second end operably coupled to one of the frame bracket assemblies, and an outwardly extending shock support tang (Fig. 12) operably coupled to one of the shock absorbers (claim 16.)

k. The shock support tang is located proximate the first end of the trailing arm (claim 17.)

l. A pair of air springs 69 each comprising a flexible boot; and a pair of trailing arms 69 each comprising a first end operably coupled to the first end and the second end of the axle 7, respectively, a second end operably coupled to one of the frame bracket assemblies 55, and a top surface comprising a first portion and a second portion (Fig. 12), wherein the second portion is adapted to support one of the air springs thereon, and wherein the second portion extends above the first portion (claim 18.)

9. Dilling does not specifically teach casting the trailing arms. Re claims 16 and 20 it would have been obvious to one of ordinary skill in the art at the time of invention to manufacture the trailing arms according to old and well-known metal forming processes such as casting, welding, forging, hydroforming, magnaforming, etc. Further, the examiner notes that the method of forming is not germane to the issue of patentability of the device itself. Re claim 18, the functional recitation "thereby substantially reducing

an amount of contact between the trailing arm and the boot of the air spring when the air spring is in a deflated condition" does not serve to distinguish over the structure of Dilling. In order to be given patentable weight, a functional recitation must be expressed as a "means" for performing the specified function, as set forth in 35USC 112, 6th paragraph, and must be supported by recitation in the claim of sufficient structure to warrant the presence of the functional language. *In re Fuller,* 1929 C.D. 172; 388 O.G. 279.

10. Claim 19 stands rejected under 35 U.S.C. 103(a) as being unpatentable over US US 5,366,237 to Dilling et al. in view of US 2004/0056446 to Dudding et al. The disclosure of Dilling is discussed above. Dilling does not teach the trailing arm with an I-beam-shaped cross section. Dudding discloses an air spring and air spring mounting assembly and teaches a cast trailing arm with an irregular I-beam-shaped cross section. It would have been obvious to one of ordinary skill in the art at the time of invention to modify Dilling's axle suspension system comprising a trailing arm having a top flange with first and second portions to cast the trailing arm with an irregular I-beam-shaped cross section as taught by Dudding so as to maintain a simple yet rigid beam especially conducive to the process of casting.

Allowable Subject Matter

11. Claims 6 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard J. McCreary, Jr. whose telephone number is 571-272-8766. The examiner can normally be reached on 0700-1700 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Dickson can be reached on 571-272-6669. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

L McCr Jr.

Leonard J. McCreary, Jr.
Examiner
Art Unit 3616

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5/15/06

PAUL N. DICKSON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600